

ADJUSTABLE HANDLE ASSEMBLY FOR A PERSONAL MOBILITY VEHICLE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an adjustable handle assembly for a personal mobility vehicle, and more particularly to an adjustable handle assembly with a mechanical lock to hold a handle in position so that the handle assembly is convenient to use for elderly and handicapped people who use the mobility vehicle.

2. Description of Related Art

Personal mobility vehicles, such as electric vehicles, aid people who are handicapped or elderly in moving from one place to another. A personal mobility vehicle typically has a chassis with wheels, a handle mounted on the chassis and a seat mounted on the chassis on which an elderly or handicapped person sits. A person sitting on the mobility vehicle controls the direction in which the vehicle moves by turning the handle. However, people's sizes and shapes vary greatly and may affect their ability to turn the handle on the personal mobility vehicle because of the position and angle of the handle. For example, some people are tall and some people are short.

Therefore, the handle of the mobility vehicle is designed to be adjustable so the angular position of the handle can be changed to accommodate widely different people who are elderly or handicapped. However, a conventional adjustment assembly for the handle of a personal mobility vehicle is inconvenient to operate. The conventional handle has a lock to hold the handle in

1 position after the handle has been adjusted but a mechanic may be required to
2 adjust and lock the handle.

3 To overcome the shortcomings, the present invention provides an
4 adjustable handle assembly for a personal mobility vehicle having a mechanical
5 lock to mitigate or obviate the aforementioned problems.

6 SUMMARY OF THE INVENTION

7 The main objective of the invention is to provide an adjustable handle
8 assembly for a personal mobility vehicle, which has a mechanical lock to hold a
9 handle of the vehicle in position and is convenient and easy to use.

10 The mechanical lock uses locking wedges and a sliding block that has a
11 bottom annular bevel to press the locking wedges to clamp a pivot post on the
12 adjustable handle assembly. The bottom annular bevel abutting the locking
13 wedges that clamp the adjustable pivot post on the adjustable handle assembly to
14 lock the handle in an adjusted position.

15 Other objectives, advantages and novel features of the invention will
16 become more apparent from the following detailed description when taken in
17 conjunction with the accompanying drawings.

18 BRIEF DESCRIPTION OF THE DRAWINGS

19 Fig. 1 is a side plan view of a personal mobility vehicle with an
20 adjustable handle assembly in accordance with the present invention;

21 Fig. 2 is an enlarged side plan view of the adjustable handle assembly in
22 Fig. 1;

23 Fig. 3 is an operational enlarged side plan view of the adjustable handle
24 assembly in Fig. 2 when a lever of the handle assembly is pivoted upward to

1 unlock a mechanical lock on the handle assembly;

2 Fig. 4 is an enlarged side plan view of the adjustable handle assembly in
3 Fig. 2 after the handle assembly is adjusted and the mechanical lock is locked;

4 Fig. 5 is an enlarged front plan view in partial section of the adjustable
5 handle assembly along line 5-5 in Fig. 2; and

6 Fig. 6 is an enlarged cross sectional top plan view of the adjustable
7 handle assembly along line 6-6 in Fig. 2.

8 DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

9 With reference to Figs. 1 and 2, a personal mobility vehicle (50) has a
10 front chassis (not shown) on which two front wheels (not numbered) and an
11 adjustable handle assembly (not numbered) in accordance with the present
12 invention are mounted. The adjustable handle assembly is connected to the front
13 wheels to allow a person sitting on the vehicle (50) to control the direction that
14 the personal mobility vehicle (50) moves.

15 The adjustable handle assembly comprises a mounting bracket (10), an
16 adjusting device (not numbered), a handle (21) and a mechanical lock (40). The
17 mounting bracket (10) is attached to the front chassis, is substantially U-shaped
18 and comprises a mounting base (11) and two perpendicular wings (12). The
19 mounting base (11) is mounted on the front chassis of the vehicle (50). The
20 wings (12) are formed perpendicular on and extend upward from the mounting
21 base (11).

22 The adjusting device is pivotally mounted between the wings (12) of the
23 mounting bracket (10) and comprises a primary pivot post (20) and a secondary
24 pivot post (30). Each of the posts (20, 30) has a top end (not numbered) and a

1 bottom end (not numbered). The bottom ends of the posts (20, 30) are mounted
2 pivotally between the wings (12) of the mounting bracket (10). The handle (21)
3 is attached to the top end of the primary pivot post (20) in a conventional manner
4 to allow a person sitting on the vehicle (50) to control the direction the vehicle
5 (50) moves.

6 With further reference to Figs. 2, 5 and 6, the mechanical lock (40)
7 interconnects the two posts (20, 30) to hold and lock the two posts (20, 30) in a
8 locked position after the posts (20, 30) are adjusted. The mechanical lock (40)
9 comprises a stationary bracket (41), two attachment pins (42), a bushing bracket
10 (43), a connecting tube (44), a sliding block (45), a biasing member (46), two
11 locking wedges (47) and a lever (48). The stationary bracket (41) is attached
12 securely to and extends out from the primary pivot post (20) and comprises two
13 mounting plates (not numbered). The mounting plates respectively have front
14 ends (not numbered) and rear ends (not numbered). The front ends are attached
15 to the primary pivot post (20) diametrically opposite to each other. The rear ends
16 extend out parallel from the primary pivot post (20). Each rear end has a through
17 hole (411) so the through holes (411) are aligned.

18 The bushing bracket (43) is mounted in the stationary bracket (41)
19 between the rear ends of the mounting plates and has two pin holes (431), a
20 bottom threaded hole (432) and a longitudinal passage (433). The two pin holes
21 (431) aligned respectively with the through holes (411) in the mounting plates.
22 The bottom threaded hole (432) and the longitudinal passage (433) are coaxially
23 aligned and communicate with each other. The attachment pins (42) are inserted
24 respectively into pairs of the aligned through holes (411) and the pin holes (431)

1 to hold pivotally the bushing bracket (43) in place.

2 The connecting tube (44) connects to the bushing bracket (43) and has a
3 top end (not numbered) with an exterior thread (441), a bottom end (not
4 numbered), an outer periphery (not numbered) and two wedge holes (442). The
5 exterior thread (441) screws into the bottom threaded hole (432) to attach the
6 connecting tube (44) to the bushing bracket (43). The wedge holes (442) are
7 defined in the outer periphery of the connecting tube (44) opposite to each other.
8 The top end of the secondary pivot post (30) passes through the connecting tube
9 (44), the longitudinal passage (433) of the bushing bracket (43) and extends out
10 of the longitudinal passage (433) to mount slidably the secondary pivot post (30)
11 in the connecting tube (44) and the bushing bracket (43).

12 The sliding block (45) is slidably mounted on the outer periphery of the
13 connecting tube (44) over the wedge holes (442) and has two outer elongated
14 sliding recesses (451) and a bottom annular bevel (452). The outer elongated
15 sliding recesses (451) are formed opposite to each other to hold slidably the lever
16 (48).

17 The basing member (46) such as a coil spring is mounted between the
18 bushing bracket (43) and the sliding block (45) to provide a restitution force to
19 the sliding block (45). After the lever (48) moves the sliding block (45) to an
20 unlocked position and compresses the spring, the restitution force returns the
21 sliding block (45) to a locked position when the lever (48) is released.

22 The locking wedges (47) are movably mounted respectively in the
23 wedge holes (442) in the connecting tube (44) and each of the locking wedges
24 (47) has a inclined surface (471) slidably abutting the bottom annular bevel (452)

1 in the sliding block (45). When the sliding block (45) is in the locked position,
2 the sliding block (45) pressed by the basing member (46) will press the locking
3 wedges (47) into the wedge holes (442) to clamp the secondary pivot post (30).
4 In such a state, the two posts (20, 30) are locked and will keep the angles of the
5 posts (20, 30) from changing.

6 The lever (48) is pivotally mounted on the primary pivot post (20), is
7 U-shaped and has two coupling arms (481). Each arm (481) is pivotally mounted
8 on the primary pivot post (20) and has a pair of sliding lobes (482) that are
9 slidably mounted in the outer elongated sliding recesses (451) in the sliding
10 block (45).

11 With reference to Fig. 3, the lever (48) is pivoted upward to move the
12 sliding block (45) up to the unlocked position and simultaneously compress the
13 basing member (46) and create the restitution force. The bottom annular bevel
14 (452) of the sliding block (45) will separate from the inclined surfaces (471) on
15 the locking wedges (47) that release the secondary pivot post (30). The two posts
16 (20, 30) are adjustable to change the angels of the posts (20, 30) that will
17 simultaneously change the angle of the handle (21) to accommodate a particular
18 person's needs.

19 With reference to Fig. 4, the lever (48) is released, the restitution force of
20 the basing member (46) pushes the sliding block (45) back to the locked position,
21 the sliding block (45) presses the locking wedges (47) against the secondary
22 pivot post (30). The locking wedges (47) clamp the secondary pivot post (30) in
23 position, again.

24 Consequently, simply pivoting the lever (48) and adjusting the angle of

1 the handle (21) is labor saving and easy for elderly or handicapped people who
2 are using the personal mobility vehicle (50).

3 Even though numerous characteristics and advantages of the present
4 invention have been set forth in the foregoing description, together with details
5 of the structure and function of the invention, the disclosure is illustrative only,
6 and changes may be made in detail, especially in matters of shape, size, and
7 arrangement of parts within the scope of the appended claims.